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ONTARIO
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REVIEW

Vol. 4, No. 3 Fall, 1965

ONTARIO

DEPARTMENT OF LANDS AND FORESTS

HON. A. KELSO ROBERTS, Q.C. MINISTER F.A. MACDOUGALL, DEPUTY MINISTER

ONTARIO FISH AND WILDLIFE REVIEW

Vol. 4, No. 3 Fall, 1965

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THE COVER

Moose are abundant in Ontario and the bull standing in a spruce bog pool on our cover is a common scene across the north country. We are indebted to Mr. Jon Hopkins of the Canada Department of Forestry, Maple, both for his excellent cover illustration and the cartoons which accompany "Hunting Hints and Prospects – 1965" on page 3. Mr. Hopkins has had a long standing interest in animals and the out-of-doors.

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The "Lucky" Hunter

Lady Luck seems to smile on certain hunters when they are afield. Seldom do they return home empty handed. Usually, they have few complaints concerning hunting conditions or the availability of game. This can be downright frustrating to those who say they find it difficult on opening day to find a place to hunt – much less, game to bag!

But is it all luck? Are all complaints concerning the lack of hunting success justified?

How much effort do hunters really make to ensure success? How many consider it sufficient to purchase a licence, ammunition and new wool socks and to then glance hopefully at the road map which will lead them to game country? Are these the lucky hunters?

Successful hunters, that we know, spend many enjoyable hours preparing and planning for their hunting trips. For many of their jaunts afield, a gun is not essential equipment, and their "hunting" does not stop with the last day of the open season. Fortune smiles on the hunter who is well prepared.

The lucky hunter invariably knows the territory he hunts. He enjoys the acquaintance of landowners who he has visited in the off-season and from whom he has permission to hunt in game covers which are often not available to others.

He is the big game hunter with a topographical map and the foresight to obtain local advice before heading into strange country.

He is out with his dog well before the season starts, scouting for the hot spots and honing the strong points of his canine companion to a fine edge.

He sharpens his eye on a range or on clay targets and he knows where his gun is shooting.

He is a builder of blinds, a tester of equipment and a whittler of decoys.

He is thoroughly familiar with the Regulations.

He has studied the habits and identifying marks of the quarry he seeks.

He is the all-season hunter who takes advantage of fine shooting often by-passed by others. Woodcock, snipe, squirrels, spruce grouse, crows, late ducks, foxes and raccoons provide him with all the hunting he can handle.

He finds excellent small game hunting in the very shadow of metropolitan areas while others stream northward towards far horizons.

In short, our fortunate friend is well prepared to enjoy the tremendous variety of top-quality shooting which is available in Ontario.

How do you compare? Are you a gameless, opening day complainer – or one of the "lucky" hunters!

Success at Sibbald Point Provincial Park. Photo by T. Jenkins.

HUNTING HINTS AND PROSPECTS---1965

by J.B. Dawson
Biologist, Southern Research Station

It is getting around to that time of the year again. As days shorten and nights grow cool, almost half a million Ontario hunters look to their calendars and start the annual count down. These are the days when poplars lose their emerald green as they gradually don their golden cloaks of autumn. Blackbirds swirl over farmlands and flock noisily to their cattail roosts. Keen hunters drive blind stakes and watch high flying squadrons of blacks etched against the reddening sky or little groups of trusting teal as they swirl and pitch close by. Moose start moving to water again.

As the summer wanes, hunters take a sudden interest in the performance of their dogs, and intensive short courses for their canine hunting companions are the order of the day. Anticipation is the greater part of realization; certainly, there is much pleasure in looking ahead and preparing for the hunt.

Prospects of good hunting for a wide variety of game are as good or better than usual for most species this year. A few predictions and hints may be helpful in "bringing home the bacon".

DEER

Prospects are good for deer hunters across much of Ontario's deer range. In the east, heavy crusting allowed deer to escape the influence of comparatively deep snow which built up rapidly last January; even moose were high-stepping it on the crust! Since the 1963-64 winter was very mild, fawns and yearlings should be in good supply this fall. In western Ontario, lush young forests (the product of recent logging operations and budworm outbreaks) still are supporting high populations of deer.

Success rates during the two-week eastern season will depend a great deal on the weather. Rain depresses the kill while a sprinkling of new snow produces happy hunters. Since the season opens one week later this year, on November 8, the chances of snow are somewhat improved.

The picture is bright for the Districts of Parry Sound, Lindsay, Tweed and Pembroke, the heartland of the eastern deer range. Last winter was a reasonably good one for deer. Although snow attained a depth of over 30 inches in Parry Sound, deer movements were not restricted for long periods.

Over 6,000 deer were inspected at highway check stations across the eastern range last year, and the precentage of fawns in the kill was the highest in years. The very mild winter of 1963-64 was favourable for deer, and well nourished does produced a bumper crop of fawns. Since fawns and yearlings constitute up to 60 per cent of the annual kill, it is easy to see why successful reproduction is so important.

The forecast is not as rosy for the Sault Ste. Marie and Sudbury areas which are located in the northernmost fringe of eastern range. Plagued by severe winters and deteriorating deer habitat, these areas have given hunters little to cheer about in recent years, and much improvement in hunting cannot be expected in 1965.

On Manitoulin Island, success rates improved last fall owing to a heavy fawn crop. Good hunting is predicted here.

Deer hunter success in the North Bay area rose slightly last fall, but success rates still cannot compare to those enjoyed during the mid-fifties. No major improvement is expected.

Success was still spotty in Pembroke District last year, but we predict somewhat improved hunting if "normal" hunting weather prevails.

Deer in the argicultural areas of southern Ontario are numerous, and winter wheat and corn fed animals provide some exceptionally large trophies. With reasonable hunting weather during the periodic short open seasons, hunters should continue to get shooting at those big bucks.

Deer still will be plentiful in Fort Frances, Kenora, Port Arthur and in southern Sioux Lookout Districts. Success rates of over 50 per cent have been enjoyed in some localities and would undoubtedly be higher if more hunting were done "eastern style" – with drivers and dogs. But this is big country. and still hunting is favoured.

Over 130,000 hunters went after whitetails last fall, and about one quarter of them downed a deer. If you were one of the unfortunates, perhaps this suggestion may help you.

Be sure your deer slayer is shooting where it should be – and burn up a box or so of cartridges before you get to camp. You might also investigate those low-power telescopic sights with tip-off mounts.

MOOSE

Growing in popularity, moose hunting attracted over 43,000 hunters who downed a calculated 11,419 animals in 1964. Across the north country, a very unseasonably wet and cold October reduced the kill appreciably. Better success should be enjoyed in 1965.

RESIDENT MOOSE HUNTING, 1964

Forest District	Hunter Success Rate	Calculated Kill
Sioux Lookout	39.8%	393
Kenora	46.2%	515
Fort Frances	45.7%	358
Port Arthur	38.1%	1,487
Geraldton	28.0%	793
Kapuskasing	26.8%	999
Cochrane	19.9%	759
Swastika	17.9%	722
Gogama	15.5%	315
Chapleau	12.9%	182
White River	20.8%	382
Sault Ste. Marie	19.9%	530
Sudbury	16.6%	399
North Bay	19.9%	467
Total	24.5%	8,301

Aerial surveys last winter showed that moose are still abundant over most of their range. Even in certain areas south of the French and Mattawa, moose are still fairly plentiful. For instance, in Parry Sound, where deer-moose hunters had taken large harvests of moose, more moose were observed on permanent sample plots last winter than in any previous year. After a year's closure, the moose season in the area south of the French and Mattawa will again be open during the two-week deer season from November 8 to 20.

The best moose hunting will still be found in the western region where almost one of every two hunters has been successful in recent years. Surveys indi-

"They seem to end right here."

cate that moose are plentiful. The Kenora staff tallied 76 moose on one 25-square-mile plot in the Maynard Lake country last January!

If you are bound for moose country this autumn, early October usually puts you in the calling season, an excellent time to hunt from the waterways. Later hunting, after the snow arrives, is increasing in popularity, and mechanized snow vehicles are an excellent means of reaching areas which are inaccessible earlier in the season. Seasons will open on Saturday across the north country this year.

Access to moose range still remains the greatest management problem; hunters are loath to leave the roads. If it's uncrowded hunting you seek, one portage will put you out of reach of most hunters. Aircraft are being used with greater frequency each year in getting "back in" Because of the time involved and chances of better success, transportation by aircraft may be cheaper than you think.

Take along a suitable weapon. You'll lose a few moose with a .30–30; rifles of calibers similar to .30–06 or .308 are better bets. And don't forget that small block and tackle or hand winch—work commences when your moose goes down!

WATERFOWL

What are the chances for "the poor duck hunter in his blind, who is cold in front and wet behind!" Word from the western Provinces indicates that the continental mallard population is at an all-time low, and the breeding population of many species is below the long-term average. Late frosts across the prairies did little to help the situation this year. Pintail numbers are up, however, and water levels are the highest in years, auguring well for the future when breeding stock "catches up" with expanded habitat. Breeding ground surveys indicate that canvasback and redhead populations also are improved, although these species are still below the long-term average.

Although the news from the western duck factory is not the best, it is not likely that the chances of Ontario hunters will be seriously affected, except perhaps along Lake St. Clair and the Detroit River which are located on the eastern margins of the Mississippi flyway.

In Ontario, much of the early season shooting is provided by local birds, and blacks, teal and wood ducks make up a large proportion of the harvest.

The beaver is maintaining excellent waterfowl habitat across the Province, although the severe drought in eastern Ontario may affect the effectiveness of beaver ponds and, thus, the distribution of ducks this fall.

Water levels on the Great Lakes are still low but are higher than last year. This may help waterfowl production to some extent and undoubtedly will make larger areas of marsh available to both

"Must be a whitetail---stands 3'6"---weighs 60 to 200 pounds."

waterfowl and hunters.

James Bay goose hunting could measure up to last year, which was most successful, but brood surveys have not been completed at this writing. Last year was a "stop over" year for snows, blues and Canadas alike, and many southern Ontario residents enjoyed the best goose shooting in many a moon. Most geese go through Ontario non-stop in autumn, but a unique combination of late hatched young and unique weather changed the usual pattern.

Western Manitoulin Island, parts of Bruce, Huron and Essex Counties, and the St. Lawrence River (near the growing goose population on the management area east of Morrisburg) are places where waterfowl gunners should keep a weather eye out for geese.

Public shooting opportunities are shrinking for duck hunters, particularly in southwestern Ontario. If you find it difficult to locate good duck hunting, why not visit the controlled public shooting areas at Holiday Beach, near Amherstburg; Rondeau, south of Morpeth; Long Point, near Port Rowan; Darlington, near Oshawa; or Presqu'ile, just south of Brighton. Good to excellent hunting was enjoyed in these regulated areas last year, and opening day hunter success at Long Point and Rondeau was the highest recorded anywhere in the Province.

GROUSE

Ruffed grouse have been at or near the bottom of their cycle in recent years across the north country, but most districts reported an increase in hunter success last year. If the trend continues, improved success in most areas is predicted.

Many people are by-passing some excellent grouse populations on their way north. In recent years, grouse have been abundant in the smaller woodlots across agricultural, southern Ontario, and many hunters are missing out. Unlike their tamer, northern counterparts, these grouse are skittish and must be taken on the wing or not at all. If it is unparalleled shooting you are after, southern grouse will be glad to oblige. A close ranging bird dog will add to the enjoyment, and remember: take along plenty of 7-½'s.

Try some of those damp, bottomland, second-growth woodlands—you may find grouse along with a flight of woodcock. Those whistling, long-billed "timber doodles" can test your skill, patience and supply of shot-shells.

SPRUCE AND SHARP-TAILED GROUSE

Reports indicate that spruce grouse, the "fool hen" of the northern boreal forest, are in good supply. This species deserves more attention, and the many tales concerning the rankness of spruce grouse flesh are undeserved, particularly during the early autumn months.

Huntable densities of prairie sharp-tailed grouse are only found in the brushy edges of farmland in the Fort Frances and Dryden areas of western Ontario and on Manitoulin Island. The western population has been at a relatively low ebb for the past two years.

Local knowledge is needed if Manitoulin sharptails are to be cornered, but the island can provide good ruffed grouse, woodcock, and in a wet year, exceptionally good snipe shooting. Along with the waterfowl which are in good supply, Manitoulin can provide an excellent variety of bird hunting.

Northern sharptails, first cousins to the prairie edition are where you find them, although northern blueberry bogs or areas opened up by fire are often productive.

PHEASANTS

Each year, a large faternity leave storm windows unwashed and leaves unraked to warm the barrel of their 12's on an immigrant bird which would rather run than fly and which is, by most accounts, two-thirds tail.

What are the prospects? Ringneck hunting should be as good or better than in 1964 in those areas along the Lake Erie and western Lake Ontario shores which consistently produce pheasants. Quality of shooting elsewhere will depend directly on the number of birds released for put-and-take shooting.

Across the cornland and on the Niagara Peninsula, abnormally warm, dry weather during the incubation and brooding period should have produced large, vigorous broods. Essex County is an exception; all information indicates that birds in Essex have declined and, although cover has been drastically reduced in recent years and is a contributing factor, it is feared that disease and/or insecticides may be the culprits.

Although the area producing self-sustaining pheasant populations is restricted, good put-and-take pheasant shooting is being enjoyed on several public hunting areas operated by the Department of Lands and Forests. For five dollars per day, one can hunt ringnecks at the following Provincial Parks: Presqu'ile, Darlington, Earl Rowe and Sibbald Point. Hunters average slightly over a bird per outing—and, of course, a few "pros" do much better. There are also commercial pheasant shooting preserves available for those who prefer exclusive shooting areas.

Here are a few suggestions which may round out your game bag if ring-

Surprise!

necks are your quarry. It is a good idea to introduce your dog to new but "birdy" looking cover before the season starts. Evenings cool off in August and September, and man and dog can get themselves in shape for the opening. Get to know the landowners; most of them will be helpful. Even if lands are posted, permission to hunt is often given to the thoughtful few who ask.

Birds are where you find them on opening day but, later in the season, those very small patches of cover, overlooked by other hunters, can be very productive.

Make haste slowly while hunting. Gun-wary old roosters will almost let you walk on them, but will get uneasy and flush if you stop every so often. (This applies to grouse as well). And don't forget your dog.

HUNGARIAN PARTRIDGE

Eastern Ontario, particularly the Nation River Valley in the Winchester, Chesterville, Berwick and Crysler areas, has consistently produced the best partridge shooting available in Ontario. Currently, partridge are recovering from a decline, and although a mild winter was followed by a very dry, warm hatching period, they probably will not have recovered completely by this fall. Much improved success over last year is predicted.

Another colony of Hungarian partridge (which does not receive the attention it deserves) is located on the clay and clay loam soils of Haldimand County. Try the Dunnville area which has produced reasonably good shooting in recent years.

In the eastern counties, a good rule of thumb is to hunt the stubble next to corn. Dogs and good legs are important assets since finding coveys can be a problem which only endless walking and fence climbing can overcome. And don't forget your binoculars. Utter frustration may result if you fail to mark down the only covey you flush in three hours of stubble cruising!

RABBITS AND HARES

Without question, the cottontail is the most sought after Ontario game species and will provide more hours of recreation this year than that provided by any other game. Trends in abundance are difficult to forecast, but we have heard of no untoward circumstances which will lower the hunters' chances. Snowshoe hares are on the upswing in their cycle in many areas, and European hare or "jacks" are in good supply over most of their normal range.

OTHER SPECIES

The tremendous variety of game available to the Ontario hunter makes it impossible to give every species adequate coverage here. Woodcock, quail, squirrels, raccoons and foxes provide exceptionally good sport, and all have their die-hard advocates. You are missing out if you haven't included them in your hunting plans. You may query the inclusion of quail, but bobwhites are on the upswing in southern Ontario, and a three-day season has been established for Middlesex, Elgin, Kent and Lambton Counties this year.

Your receipe for a memorable day afield may have varying ingredients. It surely will include good companionship, whether human or canine, ideal hunting conditions and a reasonable expectancy to see, and if fortune smiles, to tote some game home to the missus. Good Luck.

A-HUNTING LET'S GO, LADIES!

by Connie Cowan

The "for men only" attitude toward sports has declined almost to zero in our time. Almost, for there is one outdoor pastime highly regarded and much enjoyed by men which has won little support from women. Nimrods of female gender are few and far between.

Ontario game licences do not specify the sex of a hunter and so, such statistics are not available. But if one asks a dozen women of one's acquaintance, who are active in sports like golf and curling, if they have ever gone hunting or ever wanted to, most likely they'll answer: "It is not a woman's sport".

In other words, there is a generally held attitude that hunting is not socially O.K. for women. Except in that relatively small social strata where "The Hunt" is a prestigious and expensive pastime for both sexes, hunting, it seems, does not confer social status on a woman as golfing, for instance, does. Yet, not many years ago, neither golfing nor curling were considered women's sports. Now, women have their own golf and curling clubs and take part in international tournaments. Why cannot hunting follow suit?

Lady brings home pheasant.
Photo by T. Jenkins.

The physical demands of hunting are certainly not beyond the resources of a woman who enjoys walking in woods and fields. No one would want to suggest that hunting skills are beyond a woman's ability to learn. And the argument that hunting is basically abhorrent to the female sex—that she cannot go in for 'the kill' — is not borne out in nature, for the female of any carnivore forages extensively.

It is sometimes said that women want the amenities and that an important attraction of golf is the clubhouse with its sociality and comforts. These amenities exist now for waterfowl shooters, most of them exclusively male clubs. Even the deer hunter in our north woods has his sociality and comforts when he returns to camp at the end of the day—more conveniences, often, than many a woman enjoys while coping with summer cottage living. And the fact that hunting is now permitted during the open season for certain game in some Ontario Provincial Parks makes the sport readily accessible to almost anyone.

If social attitudes against women hunting (and not against men) exist today, there seems to be very little reason for them. In primitive times in Canada, among Indian tribes and white

A happy hunter, proud of her trophy. Photo by Mrs. K.M. Andresen.

settlers and pioneers, a woman was tied to the hearth. There were practical reasons why she did not hunt except in times of crises, for hunting required mobility. But women are as mobile today as men, and a woman who finds the time to golf or curl can find it for hunting if she wants to.

It is usual to encourage young boys to fish and hunt. Fathers want their sons to learn these skills early, for who doesn't admire a lad who's good with a rod or gun. A girl who's a good shot is not nearly so likely to win praise. Vestiges of the Victorian concept prevail and an acceptable training for girls still stresses the passive role in life. Attitudes, however, are subject to speedier change to-day than they were half a century ago. If mothers become interested in hunting, daughters will follow suit.

Wildlife management can be regarded as a form of crop production, and hunting is therefore looked upon as a harvesting of that crop. If hunting is considered an acceptable sport for masculine enjoyment, attitudes against women hunting are unrealistic.

It seems that increased leisure is one of the goals of our century. That being so, women will need to go farther afield than presently acceptable pastimes to fill their free time with pleasurable rewards. Ontario abounds in natural habitats where men find great enjoyment and relaxation hunting in the outdoors. When will women discover that they should have a share in it?

WENDIGO---THE NOT-SO-EVIL SPIRIT

by N.V. Martin
Research Scientist, Southern Research Station

In North American Indian legend, "Wendigo" is a devil, a mysterious evil spirit that terrorizes people. Wendigo also lurks in the depths of Canadian lakes, mysterious still, but certainly not evil or satanic – for wendigo is a fish, a rather unusual fish as it is a hybrid.

Hybridization has intrigued man down through the ages. No doubt, many of the early crosses were the fruits of idle curiosity, the "I wonder what we would get" attitude. Many hybrids, however, have been created with such specific purposes in mind as disease resistant strains, faster growth, better survival, hybrid vigour, etcetera. We have only to think of the mule, rust-resistant wheats, productive corns and others to realize the contributions that hybrids have made towards man's well-being.

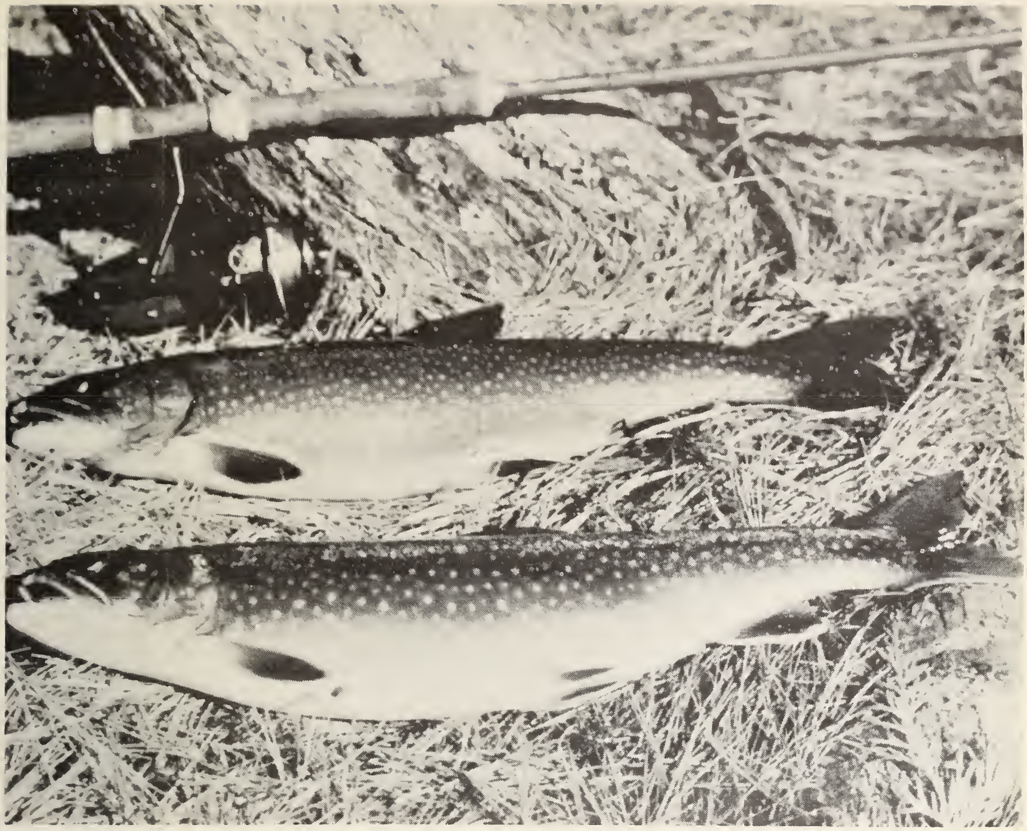
Hybrids occur naturally in many fishes. However, little has been done in the past by man on artificial hybridization of fishes. In recent years, there has been a flurry of experiments along these lines, particularly among members of the family Salmonidae, the trout and whitefishes. Considerable interest has been expressed by scientist and angler alike in a hybrid between two of Canada's prime game fish, the lake trout *(Salvelinus namaycush)* and the brook or speckled trout *(Salvelinus fontinalis)*.

The wendigo, often called splake, is really not new since this cross is known to have been carried out as far back as 1880 by the State of Pennsylvania. However, it has been only in the last ten or fifteen years that a concerted effort has been made to explore its potentialities as food and game fish.

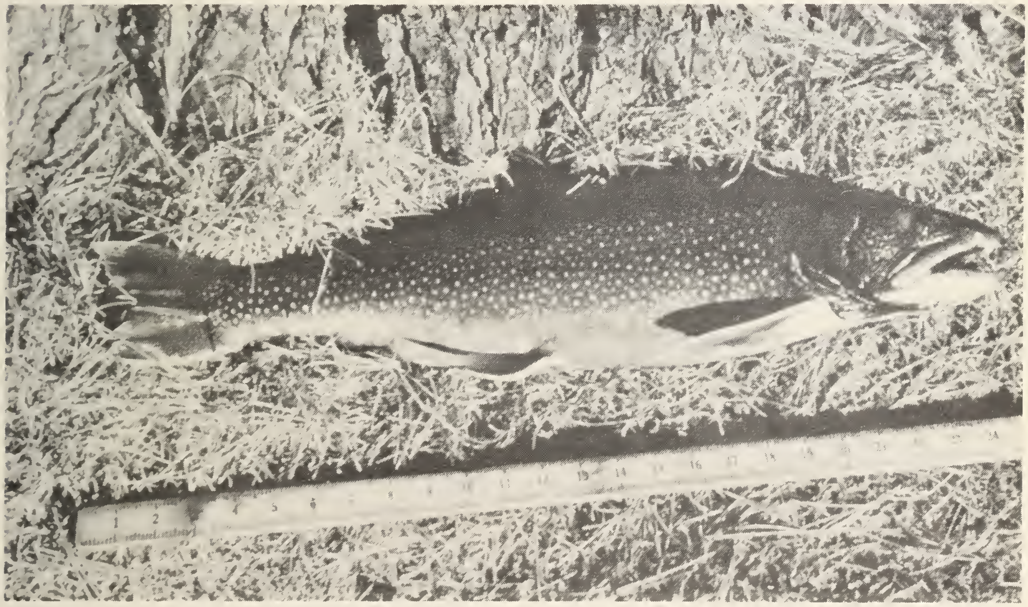
This hybrid has been created with specific purposes in mind. One of these was to acquire the most desirable qualities of each of the parent species, the large size of the lake trout and the game qualities and beauty of the brook trout. Also, the wendigo might utilize a niche in the lakes not occupied by the lake trout and the brook trout. Lastly, hybridization should result in a fast growing, vigorous animal as has been the case with many other hybrids.

Modern interest in the wendigo was aroused by the work in the Province of Alberta in the 1940's. In the early 1950's, the wendigo arrived on the scene in the Province of Ontario. The Ontario Department of Lands and Forests, in particular, has been carrying out various studies on this fish since that time. The following account deals primarily with one of these investigations and the life history and habits of the wendigo in Algonquin Park lakes.

What would the wendigo do in nature? Would it be a good game fish? Where would it live? What would it eat? How fast would it grow? Would it reproduce, and if so, where, when and how? These and many other questions awaited answer from the



Male and female (in foreground) wendigo. Photo by N.V. Martin.



Typical wendigo male from Lake Opeongo at spawning time. Photo by N.V. Martin.

Algonquin Park studies.

The wendigo proved to be an excellent game fish, fighting the dashing, twisting, sometimes spectacular battle of the brook trout. Interestingly enough, the occasional fish revealed its lake trout heritage by exhibiting the dogged, deep-water struggle characteristic of this species. The hybrids responded to most types of lures, but showed a preference for live bait in combination with these lures. They also appear to be more vulnerable to fly fishing than are the lake trout and brook trout. Wendigo are more readily caught in the warm summer months than are brook trout in Algonquin Park lakes.

One aspect of hybrid trout behaviour that has an effect on angling is its strong schooling tendency. Long periods of spotty fishing success were punctuated by short bursts of remarkably good luck as large schools of wendigo moved on to shallow-water shoals to feed. There seemed to be a periodicity about these migrations since they almost invariably occurred once in mid-morning and once in mid-afternoon. By and large, the wendigo appears to be more vulnerable to angling than either the lake trout or brook trout.

Where does the wendigo live in lakes? The lake trout generally frequents the deep, cold waters of North American lakes, usually below 40 or 50 feet in the summer months. The brook trout, on the other hand, inhabits intermediate depths—in Algonquin Park, between 20 and 40 feet. Gill nets were set over a wide range of depths in a number of lakes to find the answer. These indicated the hybrid was more similar to the brook trout in distribution, frequenting depths of 20 to 35 feet and water temperatures of 50 to 70 degrees. The netting also indicated the strong schooling behaviour of the wendigo since the fish were usually caught in groups or clumps. The hybrids prefer the shallower waters in the spring and fall months as do the lake trout and brook trout.

How do the wendigo feed? Again, it leaned towards its brook trout parent as it fed on a wide variety of organisms including mayflies, leeches, frogs, salamanders, plankton and scuds. Lake trout are primarily piscivorous.

The hybrid trout grows more quickly than does the lake trout or brook trout. In their fourth year of life, for example, they averaged four to six inches longer than brook trout and eight to ten inches longer than lake trout of the same age in Algonquin Park lakes. Two interesting questions that have yet to be answered are: how long will the wendigo live, and how big will it get. Brook trout have a maximum life span of about six years, while, in many waters, lake trout reach a maximum age of 15 to 20 years. To date, hybrids are known in nature to have reached an age of at least nine years.

The world record size for brook trout is 14½ pounds, although ten pounds is considered exceptional for this species. Lake trout over 100 pounds have been taken, but a 60-pound fish is somewhat rare. In 1960, a 16-pound wendigo was taken in a Northern Ontario lake. It is quite likely that 20-pound hybrids occur in nature at this time. Only future years

A pair of spawning wendigo on rocky slope. Photo by Bill Addison.

can provide the answer to the ultimate weight that may be reached.

Most lake trout do not reach maturity or spawn until they are six or seven years of age, while most brook trout are mature at age three. Once more, the wendigo is more akin to the brook trout as most mature at three years of age.

Will the wendigo reproduce in nature? This has been one of the most intriguing questions of all. This problem was particularly interesting in light of the great differences in the spawning habits of the parent species. Let us briefly review these.

Both the lake trout and the brook trout are fall spawners, but in general, native brook trout spawn a week or so later than do lake trout. Brook trout are essentially daytime spawners, while lake trout are nocturnal spawners. Brook trout spawn on sandy, gravelly, protected bars in one to four feet of water, while lake trout spawn on wave-swept, rocky shoals generally in four to twelve feet of water. These are some of the reasons, then, why no natural hybrids of lake trout and brook trout have ever been recorded.

Lake trout randomly disseminate the eggs over the rocky shoals. There is no permanent pairing of the sexes, no nest construction, no guarding of the eggs. The lake trout, we fear, leaves much to be desired in the acceptance of its domestic responsibilities. The brook trout, on the

Preparing to check egg survival with scuba equipment. Photo by N.V. Martin.

other hand, laboriously digs nests in the gravel. The male guards the nest and its accompanying female from all intruders. These eggs are carefully covered over after they have been deposited in the nest.

What would the wendigo do in the light of these marked disparities in the spawning behaviour of its parents? Hybrid trout do spawn. This has been observed in a number of lakes, and second generation fish have been collected. The wendigo, then, unlike some hybrids, is fertile. The observations carried out to date indicate their time of spawning is closer to that of the brook trout than the lake trout; that is, early November. The wendigo appears to prefer gravelly areas, as do the brook trout, and as a matter of fact, have been observed spawning with them in one lake. In another lake, where no such areas were present, the hybrid spawned on rocky slopes as do the lake trout. Here, however, it first cleared sandy areas

Examining spawning beds below the ice. Photo by Jack Mitchell.

which, because of the fine texture of the bottom, apparently proved to be unsuitable for nest construction. This versatility is an important feature when consideration is being given to establishing the wendigo in a body of water.

One of the interesting features of the spawning of the wendigo was the fact the same fish were on the beds both night and day. Apparently, it has borrowed both the nighttime spawning habit of the lake trout and the daytime habit of the brook trout. Hybrid vigour indeed! In a similar vein, lake trout disperse from illuminated areas when night observations are being carried out. The hybrid does not. Perhaps this is a reflection of daytime spawning.

Although the spawning fish could not dig nests on the rocky slopes, pairs of hybrids defended specific areas as do the brook trout. They sweep the grounds clean, as do the parents, and the courtship behaviour is very similar. This consists of the male nudging and nipping the female, and brushing her vent with his dorsal fin. Individual males zealously guarded specific females as do the brook trout, and have none of the carefree attitude toward affairs of the heart characteristic of the lake trout.

The spawning male brook trout is generally considered to be the most beautiful Canadian fish. The wendigo is no less spectacular in its spawning raiment. Deep pinks, mauves, oranges, blacks and whites are found in spawning males. Lake trout, on the other hand, are much more conservative in their nuptial attire, and the sexes appear quite similar.

By means of Scuba diving, the fate of the eggs was followed throughout the winter months. The incubation period (in one lake, at least) lasted from almost freeze-up to the break-up of the ice at the end of April. This represents an incubation of about six months, an unusually long period in Canadian fishes.

One last question comes to mind—the same question biologists have had to answer to innumerable Canadian anglers. How can I identify a wendigo? On the basis of external appearance, the answer is not easy as the wendigo may have characteristics of each parent in varying degrees. In shape and form, it is intermediate between the parents. The spots on the sides are not as brilliant as those on the brook trout but they are brighter than those of the lake trout, tending to a pale pink or mauve. The tail fin is not as deeply forked as the lake trout, but more so than the squarish tail of the brook trout. Identification by external appearance is precarious as individual fish may lean more to one parent or the other. Form and colour vary considerably with the water in which the fish is found. One of the surer ways is by counting the worm-like appendages, called pyloric caeca, on the intestine just behind the stomach. These number approximately 100-180 in lake trout, 20-50 in brook trout, and 70-80 in the wendigo.

The versatility of this fish is being exploited in other ways. One, that can only be mentioned briefly here, is in the lamprey *(Petromyzon marinus)* control programme on the Great Lakes. This predatory species has decimated the commercial fishes of these lakes, and various measures are being used to control the lamprey or lessen its impact. The lake trout, one of the chief targets of the lamprey, does not become seriously vulnerable to attack until it reaches a weight of about four pounds. At this size, however, it has not yet spawned. Selected stocks of hybrid trout, with the deep swimming capabilities of the lake trout and the early maturing habit of the brook trout, will be extensively planted in the Great Lakes. These fish, then, should live in the deeper, colder waters and spawn at least once before they are attacked by the lamprey.

Selective breeding and hybridization have a tremendous future in fishery science, and the wendigo may well be a part of this future. Although the present account has spoken of this hybrid in generally glowing terms, there is still much to be learned about how best to use its potential. With the exercise of wisdom and foresight, the evil, mysterious wendigo of yore may well be a blithe spirit.

LILLABELLE LAKE WATERFOWL MANAGEMENT STUDY

by W.A. Creighton
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(Photographs by the Author)

The waterfowl population and nesting study at Lillabelle Lake was initiated in 1962 to provide some information on certain environmental properties of wetlands as they affect waterfowl. A lack of such information, not only for Lillabelle Lake but also for other wetlands, made waterfowl management difficult and subjective. Hence, our study was exploratory in nature. Once inventory of the waterfowl and habitat resource of key wetlands has been completed, management recommendations to improve waterfowl production and to provide better public hunting opportunities can be implimented.

Lillabelle Lake, located three miles north of Cochrane, has an area of 435 acres and an average depth of six feet. This study area was selected on the basis of a substantial waterfowl population, accessibility, and importance of the lake in the fall as a hunting area.

What species and how many waterfowl are present during the spring, summer and fall? What is the waterfowl breeding population and production of this wetland? What and how much plant cover is available for nests as well as for broods? Can we improve waterfowl production and plant cover by manipulation of the environment? These questions formed the basis of our investigation of Lillabelle Lake.

From the inception of this study, we limited the scope of the investigation to the following four considerations:

1. The division of Lillabelle Lake into general habitat types according to a classification based on plant succession.
2. The location of waterfowl nests, with some measure of density of nests in each habitat type, production per nest and production for the whole lake.
3. An analysis of nesting habitat.
4. A census of waterfowl species over the period of study, including a brood count.

Plans for the future include a partial analysis of potential food production in the lake with some estimate of carrying capacity related to food availability.

This inventory of habitat, nesting sites, waterfowl numbers and food conditions, although extensive in nature, is prerequisite to good waterfowl management.

How is this aforementioned data obtained? Several habitat types of Lillabelle Lake were mapped during excursions by boat and on foot, employing aerial photographs as an aid in locating boundaries. Only broadly recognizable areas were mapped according to the following classification of plant cover:

A – aquatic

Type	*Description*
Ao--	deep open water, not supporting rooted submergent vegetation.
As--	open water, shallow enough to permit growth of rooted submergent vegetation.
Ae--	shoreline areas which may be seasonally inundated; emergent vegetation present.

T – terrestrial

Type	*Description*
Tg--	open land, not normally inundated populated by grasses and forbs; minimal growth of shrubs and trees.
Ts--	sedge meadow; similar to Tg, only with sedges replacing grasses as the most abundant life form.
Te--	heath; bog type of vegetation; shrubby, ericaceous vegetation.
Tc--	cultivated land; fallow, pastured, or seeded (grain or forage).
Tw--	wooded land; includes upland hardwood bush or bottomland coniferous bush, overgrown willow or alder areas.

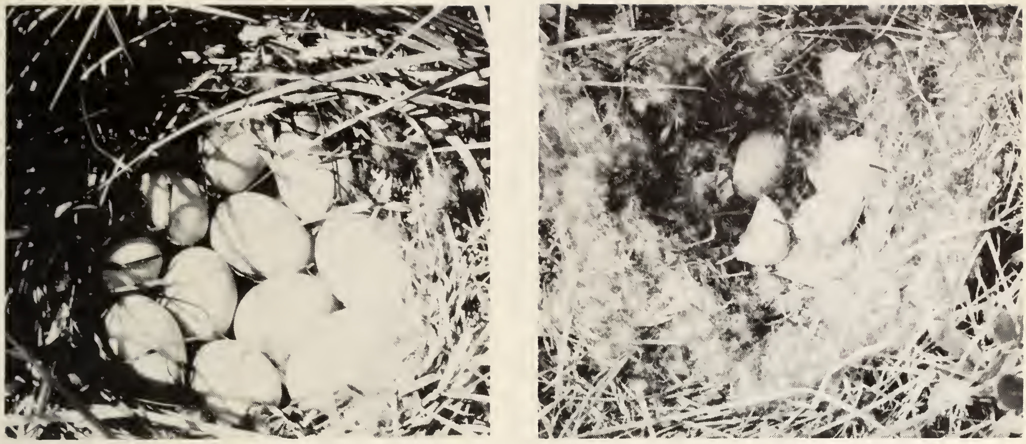
In order to locate waterfowl nests, we employed three sampling procedures: Method I --flushing rope; Method II --walking; and Method III --bamboo pole and canoe. The basic approach to Method I was to search the vegetation with one-acre circle plots using a flushing rope. A stake bearing a 117.8 foot rope was driven into the ground at the centre of a selected site for sampling, and tin cans, partly filled with pebbles, were tied on at 25 foot intervals. Because nesting ducks "sit tight" during the incubation period and, therefore, nests are difficult to find, this method of flushing the female off the nest was considered best in an open situation.

Because many shrubs and snags in the inundated sedge meadow and alder bottomlands at the south end of Lillabelle Lake interfered with the flushing rope method, this procedure was altered by dividing the circle into quadrants. Each section was searched thoroughly using a willow or adler switch as a flushing bar– a time-consuming but effective method.

In the emergent vegetation, Ae, of both the east and west shores of Lillabelle Lake, Methods II and III were employed. The shallow, east shore was walked on a path equidistant from the shoreline and the outer edge of the emergent vegetation (Method II). The emergent vegetation on the deeper west shore was sampled from a canoe using a bamboo pole as a flushing bar (Method III).

After three years of study, we are able to summarize what we have discovered about this wetland. In the opinion of the writer, only 75 acres of the shoreline is suitable as nesting habitat for either dabbling or diving ducks. The preferred, available nesting area is sedge meadow, comprising 40 of the 75 acres. The best index to waterfowl production for the entire lake is

Emergent vegetation along the east shore of Lillabelle Lake: soft stem bulrush on left and narrow-leaved cattail on right.



Left: Nest and complete clutch of blue-winged teal during incubation. Right: After successful hatch. Note white-centred down, shell fragments and membranes.

found in this vegetation for eight of the ten duck nests discovered in 1964 were situated here. The remaining 35 acres were composed exclusively of grasslands on the east and north shores of Lillabelle Lake.

To obtain an estimate of the transient and resident waterfowl population, it was necessary to conduct a duck count by boat along an established transect at least twice each month from April to September.

Black ducks, mallards and green-winged teal were the first migrants to appear in the springs of 1963-1965. They arrived on April 25, April 15 and April 13, respectively. Peaks of migration in the years 1963 and 1964 were on the dates May 7 and May 22 when duck counts revealed 293 and 305 waterfowl. The waterfowl population fluctuated greatly throughout the spring, summer and fall. As an example of fluctuating waterfowl numbers in the spring of 1964, three waterfowl arrived on April 15 and the population continued to build up in numbers to 158 ducks and 25 geese until April 23rd. By April 27 this flock had dwindled to 85 ducks and did not reach a peak again until May 22 when 305 ducks were counted.

Each year, because this lake was not ice-free until approximately the first week of May, ducks and geese concentrate in the creeks to the north and south of this lake as well as in a shallow overflow pool from a drainage ditch on the east shore.

In the summers of 1963 and 1964, 34 and 61 breeding pairs, principally American widgeon, lesser scaup, blue-winged teal, ring-necked duck, mallard, black duck, shoveler and green-winged teal, remained to establish nesting territories and sites. In the fall, Lillabelle Lake became the staging area for from 325 to 400 waterfowl in 1963 and from 700 to 800 in 1964.

Because black duck and mallard broods were observed during the first or second week of June in each year and classified as one- to three-week-old

(Ia-IIa) broods according to a field guide by Gollop and Marshall (1954), with a knowledge of the incubation and egg laying period, we concluded that these hens commenced nesting the last week in April to the first week in May. Greater accuracy to within a few days of the actual beginning of egg laying can be obtained if a duck nest is discovered before completion of the clutch and the start of the incubation period. Nesting activity of American widgeon, lesser scaup, blue-winged teal, and ring-necked duck began in earnest the third week in May. Species found nesting at Lillabelle Lake were mallard, blue-winged teal, lesser scaup, ring-necked duck and American widgeon. Broods of other species observed on the lake, thus obviously nesting there or close by, were black duck, shoveler, and green-winged teal.

Seventy per cent of the nests discovered hatched successfully, and ninety per cent of these nests were located within 50 yards of open water. There was an over-all hatching success of 82.4 per cent—some eggs did not hatch because of egg infertility or embryo mortality. The clutch size varied from 7 to 12 eggs, the average being 9.1. Our findings revealed an average hatch per nest of 7.5 eggs with a range in hatching success from 11 to 100 per cent.

Unsuccessful nests were classified as follows:

1. Molested nests were defined as those showing some evidence of predation; i.e., shell fragments and down from nest scattered, eggs missing with no evidence of hatching present; or hen found dead beside nest, etcetera.
2. Nests were considered deserted if egg laying or incubation had ceased with no evidence of destruction having taking place.
3. Nests were considered flooded when water levels rose, covering the nest to a depth of several inches or merely flooding the bowl of the nest, thus discouraging the female from further incubation.
4. Nests destroyed by other events, not related to the above, or unexplained were tabulated as such.

Nesting densities were greatest in the floating sedge bog and tussock sedges of the west and south shores of the lake where one nest per 4.6 acres was discovered. Production in terms of young per acre or broods per lineal mile was 0.1 young/acre or 1.0-1.5 broods/lineal mile. A proportion of the broods present in this area may have been missed by observers employing

Nine lesser scaup ducklings between one and two weeks old---one of 26 broods observed on Lillabelle Lake in 1964.

our present survey technique; however, correction for unobserved broods would not substantially alter production estimates to more that 5-6 broods per 100 acres.

Nesting density estimates referred only to nests of ducks of the family *Anatidae* (ducks, geese and swans) and not to the nests of the species belonging to the families *Podicipedidae* (grebes), *Rallidae* (rails, gallinules, and coots), and *Scolopacidae* (woodcock, snipe and sandpipers). In addition to ten duck nests discovered, nests of other aquatic and upland game birds were identified – 16 red-necked grebe nests, three sora nests, two American coot nests and one common snipe nest.

Generally speaking, nesting facilities for diving ducks are good but can be improved with proper management. Dabbling ducks are limited in nesting area to several, poorly drained upland fields. Food is abundant and is fair to good in quality. Brood cover, in the form of stands of hardstem bulrush and cattail plus inundated tussock sedges, is excellent. With this information at hand, management principles can be applied to the less productive area within the environment, thereby improving habitat and production.

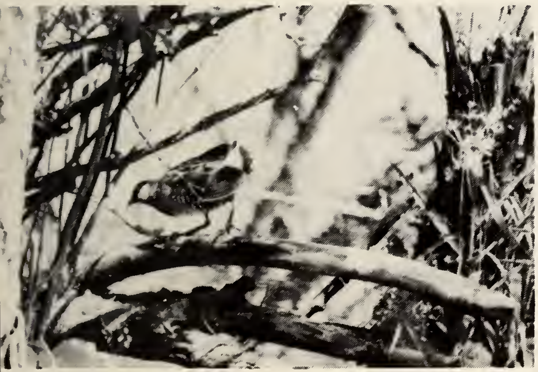
Like pieces of a jig-saw puzzle fitting together to give a complete picture, projects indirectly related to this particular population and nesting study of Lillabelle Lake provided additional information on distribution and flyway patterns of locally-reared and migrant waterfowl. Hunter success and kill statistics were also derived. These projects are: the fall waterfowl banding programme and the duck check station established for the opening day of the waterfowl hunting season.

The initial waterfowl management proposals are as follows:

WATERFOWL PRODUCTION

1. Improve and increase nesting habitat for divers by clearing alder and willow from certain areas along the west and south shores, thereby releasing sedge and emergent nesting cover.

2. Increase length of shoreline to provide a greater diversity of water to land (edge effect) by dynamiting ditches and ponds in the floating bog of the west shore. Mendall (1958) has used this type of management successfully in Maine and New Brunswick to increase waterfowl populations. Its success in increasing waterfowl populations appears to be twofold: first, it increases the amount of habitat of the kind necessary for territories; second, it makes part of the less satisfactory but po-



The sora rail nests in the sedge meadows and alder bottomland of Lillabelle Lake.

tentially useful nesting cover available through the introduction of adjacent water.

3. Locate 25 to 30 anchored logs as loafing and preening spots in the vicinity of nesting cover of the south, west and east shores of Lillabelle Lake.

4. Create a cluster of ½ – to one-acre ponds with water-level control devices (flap gates on culverts for drawdowns) on the east shore of Lillabelle Lake north of the government dock. Spoil must be levelled to within one foot of the water level in the ponds to provide suitable dry nesting sites. All the essentials of good pond management for a stock pond as well as for waterfowl should be applied. Fences prevent overgrazing of vegetative cover needed by ducks.

5. Promote improved drainage of upland fields and encourage the development of a hay and pasture border, 200 yards in width, along the east shore.

6. Experiment with several different designs of both wood duck and mallard nesting boxes in the creek at the south end of Lillabelle Lake.

7. Maintain water level during the nesting season in order to avoid flooding of nests by means of the control dam at the north end of the lake. According to Mendall (1958) in one of his examples from Barn Meadow, Maine, the range of tolerance for both black ducks and ring-necks lay within a six-inch variation in water level, while a variation greater than six inches resulted in progressive loss by flooding. At only nine inches above the optimum black duck level, about 75 per cent of the nesting cover for either blacks or ring-necks was under water. We have not determined the optimum water level for blacks or ring-necks at Lillabelle Lake.

8. Reduce wave action. Although not directly related to waterfowl production on Lillabelle Lake, the excessive wave action against the east shore has eroded away a great amount of the upland fields. A continuous series of floating log booms, attached in units of two or three logs (about two feet between logs) and anchored in a line off shore, would break the force of the waves and may prevent further erosion.

HUNTING OPPORTUNITIES

1. Better hunting opportunities would be provided in the vicinity of the stock ponds.

2. Jump shooting from a canoe would be enhanced along the west shore by providing "in-bog ponds and ditches" and loafing logs for waterfowl.

In the summer of 1965, we began to put these proposals into effect. To date, we have placed 25 loafing logs in position and have dynamited 10 potholes and six ditches in the floating bog of the west shore. In the years ahead, we hope to accomplish most of the proposals set forth under this study for the betterment of the duck population and for the benefit of the hunting public.

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HUNTER'S BULLETIN

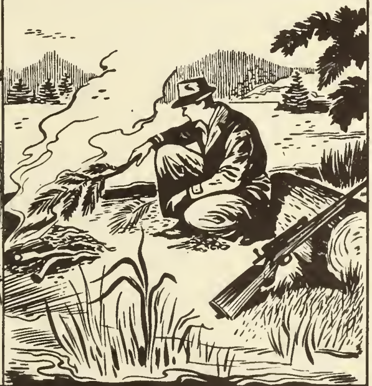
Take Your Time—Watch Your Step

Shoot only when you're sure it's legal game

Know what's beyond your target

Know where your companions are located

If you're lost . . . don't panic, get comfortable



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